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Description

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] The present application claims the priority of provisional patent application serial No. 60/410,019, filed on Sep. 10, 2002, inventor and applicant Rajendra Jagad and Phil Nash (added due to amendment to the patent application as required by 35 U.S.C 116)

FIELD OF THE INVENTION

[0002] This invention relates to methods of adding colorful lights to floral arrangements using SIP sockets to connect light emitting diode and PCB mounted power connectors.

BACKGROUND OF THE INVENTION

[0003] I was urged to create this invention for a florist who sold candy arrangements similar to flower arrangements, my invention is specifically designed for floral arrangements and was created with Florists in mind. Florists create a floral arrangement by combining stemmed flowers, stemmed leaves and twigs to create a unique arrangement every time. My invention allows the florist to plug in the bi-color Light emitting diode the same way he/she would insert a flower in an arrangement. However, in this case he/she uses a Light emitting diode instead of flower and plugs it into a Printed Circuit Board instead of a flower holder.

My invention allows the Florist to plug at least two terminals of the bi-color Light emitting diode into the Printed circuit board, which has a female SIP socket firmly

mounted on it. The LED has long adjustable coiled tie wrap wire attached to it. This hard steel-like wire allows the LED to stand just like a flower pot all by itself. The Florist can then plug in another LED with opposite polarity to the first and it will display a second color. If another LED is plugged into a different SIP socket the LED displays both the colors simultaneously. The invention is easy to use and with a low manufacturing cost.

PRIOR ART WORK

There are many floral light inventions, such as Floral light fixture, 5,309,334, however they do not offer the florist the ability choose the color displayed by the LED simply by plugging in at least two terminals in the chosen SIP sockets then simply changing the color by plugging it into a different SIP socket. Patent 4,107,036, titled "Article of Jewelry with flashing diode" does display LED at the end of the wire. However, on page five column one, line 58, it mentions connecting the wire using soldering. It implies the use of male female connector on line 62 but that is where the similarity ends. The proposed design in superior. A female SIP socket is used in conjunction with steel wire which is firm and flexible, Also there is no enclosure, the battery is connected directly to the Printed Circuit Board making it cost effective to manufacture and easy for the florist to make the manual connection. Another Patent that is similar to mine is 6, 217,188 by Wainwright et al Titled "color changing fiber optic illuminated display". This patent shows programmable controller on a printed circuit board (33) using tri-color LED (25) to display different ranges of colors. On page 12 he explains (second column line 52) that programmable means include suitable instruction (software code or some logic) that will change the brightness or intensity or color. My invention requires no programming, just plugging in the bi-color LED in a SIP socket to obtain the desired color. My invention is a better and lower cost design for the Florist.

SUMMARY OF THE INVENTION

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[0005 As stated in my provisional application, 60410019-091002, in the last four lines of the witnessed statement and invention disclosure, " As I further thought about how to make it specifically for florists I eventually, came up with SIP socket idea by trial and error. The SIP socket would allow the florist to add an LED just like a flower stem."

[0006] An apparatus is disclosed which provides integration and interconnection of one or more bi-color light emitting diodes (LEDs), a printed circuit board and a power source. A florist can select the color of the light to be emitted by simple plugging in at least two terminals for the first color then plugging in at least two terminals in different sockets to display the second color, then again plugging the LED into different sockets to display both colors. The florist can further control the intensity by adjusting the potentiometer

(variable resistor) located on the circuit similarly the light intensity and the on-off timing sequence of the each of the light sources can also be controlled manually.

[0007] In one embodiment, an apparatus is provided comprising a bi-color light emitting diode having at least two terminals; a portable power source; and a printed circuit board containing an integrated circuit. The bi-color light emitting diode and the printed circuit board can be combined manually using SIP socket in a first configuration such that the light emitting diode is in a first state. The light emitting diode, portable power source, and the printed circuit board can be combined in a second configuration such that the light emitting diode is in a second state, wherein the first state differs from the second state. In the first state the light emitting diode may emit light of a first color. In the second state the light emitting diode may emit light of a second color and in the third state it may emit both the colors simultaneously The Bi-color LED is attached to a 26 gauge steel wire which is normally used for tie wrap. This allows the LED to stand erect like a flower. The firm flexibility of the wire allows the florist to position the LED in a desired location very easily

[0008]

BRIEF DESCRIPTION OF THE DRAWINGS

[0009] FIG. 1A shows a front view of an apparatus in accordance with a first embodiment of the present invention;

[0010] FIG. 1B shows a top view of the apparatus of FIG. 1A;

[0011] FIG. 1C shows a bottom view of the apparatus of FIG. 1A without a power source;

[0012] FIG. 1D shows a bottom view of the apparatus of FIG. 1A with the power source;

[0013] FIG. 2A shows a front view of another apparatus in accordance with another embodiment of the present invention;

[0014] FIG. 2B shows a top view of the apparatus of FIG. 2A;

[0015] FIG. 2C shows a bottom view of the apparatus of FIG. 2A without a power source;

[0016] FIG. 2D shows a bottom view of the apparatus of FIG. 2B with the power source in FIG. 2A;

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DETAILED DESCRIPTION OF THE DRAWINGS

[0024] FIG. 1A shows a front view of an apparatus 100 in accordance with an embodiment of the present invention. The apparatus 100 is comprised of a power supply 101a, a printed circuit board 102a, connecting SIP sockets 103a, 103b, and 103c, 103a', 103b', and 103c' (shown in FIG. 1B) wires 104a and 104b, 104a' and 104b' (shown in FIG. 1B) and bi-color light emitting diode (LEDs) 105a to 105b. The power supply 101a has terminals 111b and 111b' which are connected to terminals 111a and 111a', respectively, of the printed circuit board 102a. The printed circuit board 102a includes an integrated circuit. Each of the Bi-color LED 105a-105b and other bi-color LEDs to be described in later FIGS., has two terminals which are connected to wires for providing electric current. FIG. 1B shows a top view of the apparatus 100. Current flows from the battery 101a to the positive terminal 111b to the positive terminal 111a to the printed circuit board 102a to the socket 103a through the wire 104a to the light emitting diode 105a. The current illuminates the bi-color LED 105a when the current flows through this bi-color LED 105a. From the LED 105a, the current goes back to the socket 103a' shown in FIG. 1B which is grounded through the terminal 111a' connector or terminal to the negative terminal 111b' of the battery or power supply 101a. Thus there is a complete circuit. FIG. 1C is a bottom view of the printed circuit board 102a without the power supply 101a and FIG. 1D is a bottom view with the power supply 101a installed onto the printed circuit board 102a.

[0025] FIG. 2A shows an apparatus 200 in accordance with an embodiment of the present invention. The apparatus 200 is comprised of a power supply 201a, a printed circuit board 202a, connecting SIP sockets 203a, 203b, 203c, and 203d, connecting SIP sockets 203a', 203b', 203c', and 203d' (shown in FIG. 2B) wires 204a-204i, and bi-color light emitting diode (LEDs) 205a to 205h. Power supply 201a includes positive terminal 211b and negative terminal 211b'. The printed circuit board 202a includes an integrated circuit. Note that connecting wire 204a into socket 203b, as shown in FIG. 2A, electrically connects the wire 204a with the terminal 211a which is electrically connected to the

terminal 211b of the power source 201a. Connecting wire 204i into the socket 203c, as shown in FIG. 2A, electrically connects the wire 204i with the terminal 211a' of the circuit board 202a, which is connected to the terminal 211b' of the power source 201a. A closed circuit is thus formed, i.e. current flows from the power source 201a to the terminal 211b to the terminal 211a, to the circuit board 202a, to the socket 203b, to the wire 204a, to the LED 205a to the wire 204b, to the LED 205b, to the wire 204c, to the

LED 205c, to the wire 204d, to the LED 205d, to the wire 204e, to the LED 205e, to wire the 204f, to the LED 205f, to the wire 204g, to the LED 205g, to the wire 204h, to the

LED 205h, to the wire 204i, to the socket 203c, to the circuit board 202a, to the terminal 211a' and to the terminal 211b' of the power source 201a.

[0026] Each of SIP sockets 203a-203d shown in FIG. 2A and each of sockets 203a'-203d' connects to one of the two terminals 211a or 211a', which connects to terminals 211b and 211b', respectively, of the power source 201a. In this manner, connecting wire 204a to one of the two terminals 211a or 211a' and simultaneously connecting wire 204i to the other of the terminal 211a' or 211a causes a closed circuit to be formed.

[0027 To obtain the first state of the Bi-color LED 204a, first open end of the terminal steel 26 gauge wire connects into 203a female SIP socket making a tight fit. The second open end connects into 204j of the steel 26 gauge wire connects into socket 203a', thus forming a close circuit and displaying the first color. To obtain the second state, the florist just swaps the polarity by plugging in the 204j terminal into 203a and 204a terminal into 203a'. All the LEDs 205a through 205i will display the second color. A third state that simultaneously displays both the LED light colors can also obtain by plugging the 204a into 203b' and 204j into 203c'.

[0028] In the above example, the wire strand 204a-204j displays total of 9 bi-color LEDs 205a-205i. If a florist use only one bi-color LEDs of one color and one bi-color LEDs of another color one simply has to cut the 26 gauge soft steel wire at 204b giving him single LED 205a with two terminals 204a and 204b. He can apply the same principle as 204a-204j. If the florist wishes to use only two bi-color LEDs he/she cuts the wire at 204c. Thus giving him two LED 205a and 205b with two terminals 204a and 204c. And so on and so forth.

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